**2023**

**Year 12 Integrated Science – Unit 3**

**Task 3: Ecosystem Abiotic and Biotic Factors**

**Validation**

**Weighting: 10%**

**Time Allowed: 40 minutes**

**Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date: \_\_\_\_\_\_\_\_\_\_\_\_**

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| **Total Marks** |  |

*I acknowledge that all the information contained in this task is my own work and not taken from other sources. If other sources have been used they have been acknowledged in my references.*

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(Student Signature)

*Please see SEQTA for teacher feedback and comments.*

1. The clownfish and the sea anemone have a well-defined symbiotic relationship.
   1. What type of symbiotic relationship is this? **(1 mark)**

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* 1. Explain your reasoning for part **a.** **(2 marks)**

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* 1. Describe one abiotic factor that impacts the ecosystem that these species live in. **(2 marks)**

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1. A large rainfall has resulted in a large amount of water entering an estuarine ecosystem. As it is farming season this has meant that a large amount of fertiliser has been added to soils. Resulting in a large amount of effluents such as Nitrogen stimulating an algal bloom.
   1. What is the abiotic factor in this situation? **(1 mark)**

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* 1. Explain the impact that humans have upon the abiotic factor in this example. **(3 marks)**

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1. A team of biologists spent six months on an isolated island off the south-west coast of Australia. Their task was to prepare a biological survey of the estuary on the island. One biologist investigated the feeding relationships of the estuary and presented a summary of his findings in the paragraph below.

*Small fish and shrimp have been observed eating seagrass in the offshore ecosystem in Southwest Western Australia. Small fish also consume zooplankton and algae, whereas shrimp have been observing eating dead remains. Phytoplankton is consumed by the zooplankton populations. Octopus and squid are observed eating shrimp and small fish, while urchins observed only consuming algae. Jellyfish are considered the predator of zooplankton and phytoplankton, in which the pink snapper is the only consumer of the jellyfish. Pink snapper also eats squid, octopus, small fish, and sea urchins. Dhufish is the other large fish also observed eating squid, octopus, and small fish. Seals and sharks are observed hunting Dhufish and Pink Snapper.*

* 1. Draw a food web of the information provided in the space below. **(8 marks)**
  2. For each trophic level in the food web, colour code the organisms that below to it (I.e. Producers green, first order consumers blue, second order consumers red etc.) **(5 marks)**